Bucky unit INALFA

4512 201 0223. sensing right
4512 201 0224. sensing left
4512 201 0225. non sensing right
4512 201 0226. non sensing left

FILING INSTRUCTIONS

File this documentation in binder:

Subsystem manual BuckyDiagnost TH2 / TF

Unit manual BuckyDiagnost VE / VT

Subsystem manual BuckyDiagnost VE2 / VT2

Subsystem manual Easy Diagnost Eleva

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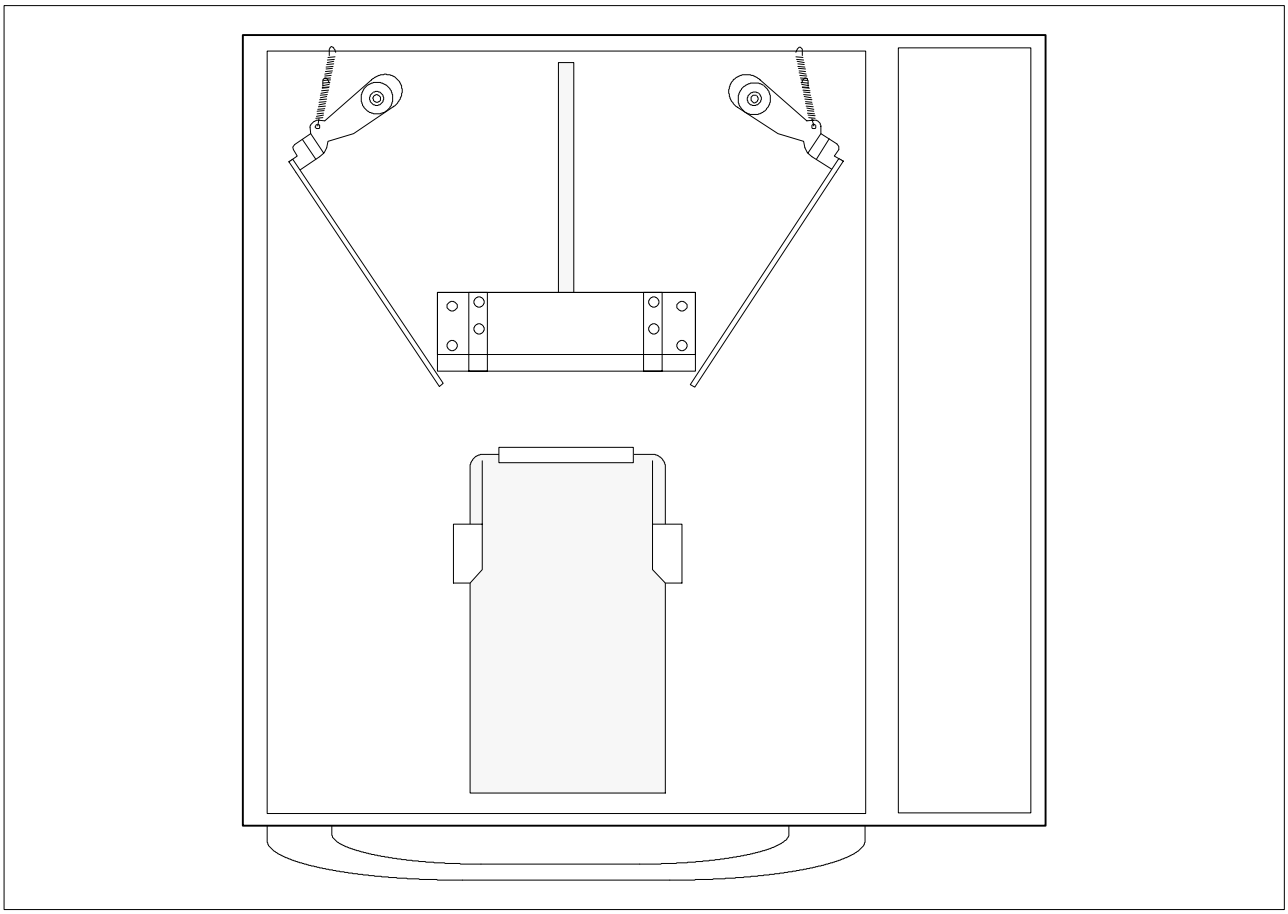
PHILIPS

Philips Medical Systems

SERVICE MANUAL
746
UNIT

Bucky unit INALFA

4512 201 0223. sensing right
4512 201 0224. sensing left
4512 201 0225. non sensing right
4512 201 0226. non sensing left



DMC Hamburg

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SERVICE MANUAL - UNIT

764

Bucky unit INALFA

Author: M. Hasche

4512 201 0223 . sensing right
4512 201 0224 . sensing left
4512 201 0225 . non sensing right
4512 201 0226 . non sensing left

In case there are any questions concerning this manual,
please send this LOPAD via fax to 49/(0)40/5078 2481

File: Bucky unit INALFA 25151AE

List of pages and drawings (LOPAD)

Manual Order No: 4512 984 25151
released: 11/2004

0.5

1
2

3 ... 30 (04.2)

Z1-1.1 (04.0) A3
Z1-1.2 (01.0) A4

Z2-1.1 (04.0) A3
Z2-1.2 (04.1) A3

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Bucky control and bucky sensing VA1, VA2 ..... Z1-1.1
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Bucky unit non sensing wiring diagram and labeling Z2-1.2

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1. Introduction

This documentation is valid for bucky units.

The bucky unit is part of the BuckyDiagnost family and can be installed in BuckyDiagnost TH and BuckyDiagnost VE/VT systems together with the X-ray generator OPTIMUS 50/65/80 or in Easy Diagnost Eleva stand and BuckyDiagnost VE/VT with X–ray generator Velara.

The bucky unit is characterized by:

- An oscillating grid mechanism designed to accommodate a fine-screen grid.
- Accommodation of an automatic cassette tray (with sensing).
- The ”MUX Sensor” is a new improved sensor. The sensor operates with a higher diode optocoupler current. With inserted cassette tray, the tracks 1...4 are scanned continuously. The output is similar to the old style of sensors. The output of the tracks is stored and the signal can be measured with a simple multimeter: H = 11.4...14.0 V , L = 0.8 V +/- 0.2 V.
  Mechanical adjustment of positioning the sensors is also different compared to the ”old style”.
- Wide working range from 1 ... 1.5 mm distance between optocoupler and reflector
- High signal pulse current I = 20 mA compensates the aging rate of optocoupler/photo diode.
- MUX sensors are upgradable and operate with firmware on VA2 – vert. rel. 6.1G, hor. rel. 3.0
- The horizontal plate must be exchanged.
  The new horizontal plate shows the same bit pattern but uses different black/white sections.
- The MUX sensors operate with the interface board (VA3) located as a pick–a–back board on VA2. This board also includes the LEDs on tracks 1...4 vertical / horizontal direction.
- The LEDs can be used for an easy trouble shooting.

2. Compatibility

The bucky unit is compatible with:

- Grid 36/12 FO 100 9860 836 90101
- Grid 40/12 FO 110 9860 846 90111
- AMPLIMAT chamber 9890 000 01611

3. Technical data - Environmental conditions

According to PMS standard UXN 13600 class C1 (indoor temperature controlled)

During regular work:

- Ambient temperature: +10 °C to +40 °C
- Relative air humidity: 20 % - 80 %
- Air pressure: 700 to 1100 hPA

During storage / transport:

- Ambient temperature: -25 °C to +70 °C
- Relative air humidity: 5 % - 95 %
- Air pressure: 700 to 1100 hPA

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4. Measurements and weights

Measurements	570 x 580 x 74 mm

Weights	12 kg

5. Scope of delivery

Depending on ordered version:
Bucky unit with installed grid, AMPLIMAT measurement chamber and cassette tray without sensing.

6. Site preparation

There is no extra planning necessary.
Operating voltages:

- 24 V DC (included in the release cable)
- max. 350 mA power consumption

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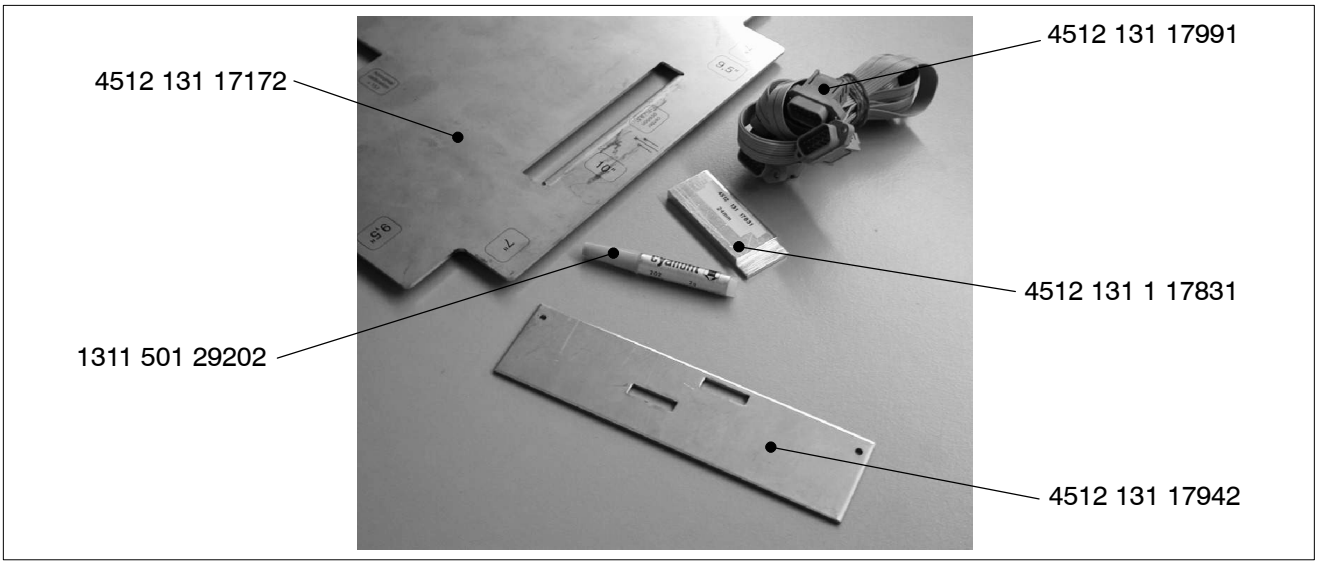
7. Tools / Material required

1. Standard tool kit.
2. 2 x extension cable about 2 to 3 m, 9-pole Sub-D with male/female 4512 131 17991
3. Multimeter
4. Mixed adhesive / Super glue 1311 501 29202
5. Permanent waterproof felt-tip pencil
6. Measuring tape, vernier calliper
7. Feeler gauge
8. Template for cassette recognition 4512 131 17172
9. Template for sensor adjustment 4512 131 17831
10. Template for support plate 4512 131 17942



7.1. MANUAL HISTORY

Date	Version	Name	Reason of changes
2004-11-15	4512-984-25151-AD	M. Hasche	Value of current consuption changed in section 6
2004-11-22	4512-984-25151-AE	M. Hasche	Easy Diagnost Eleva

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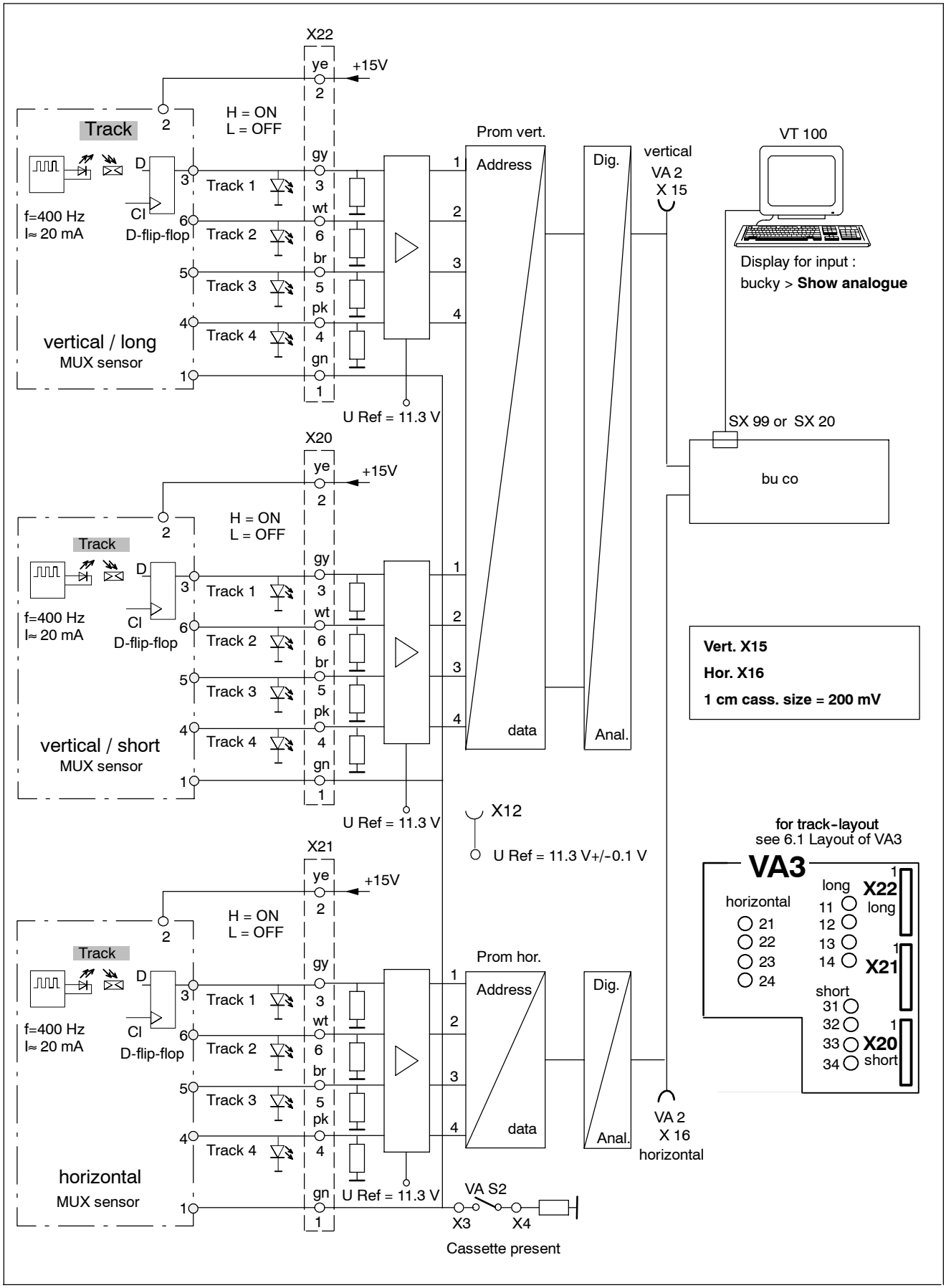
8. Working of the MUX sensor



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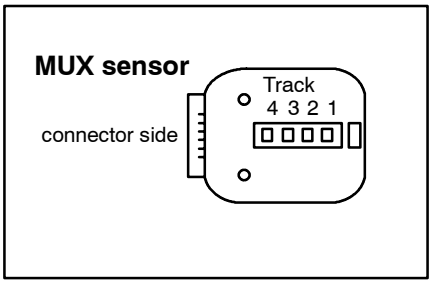
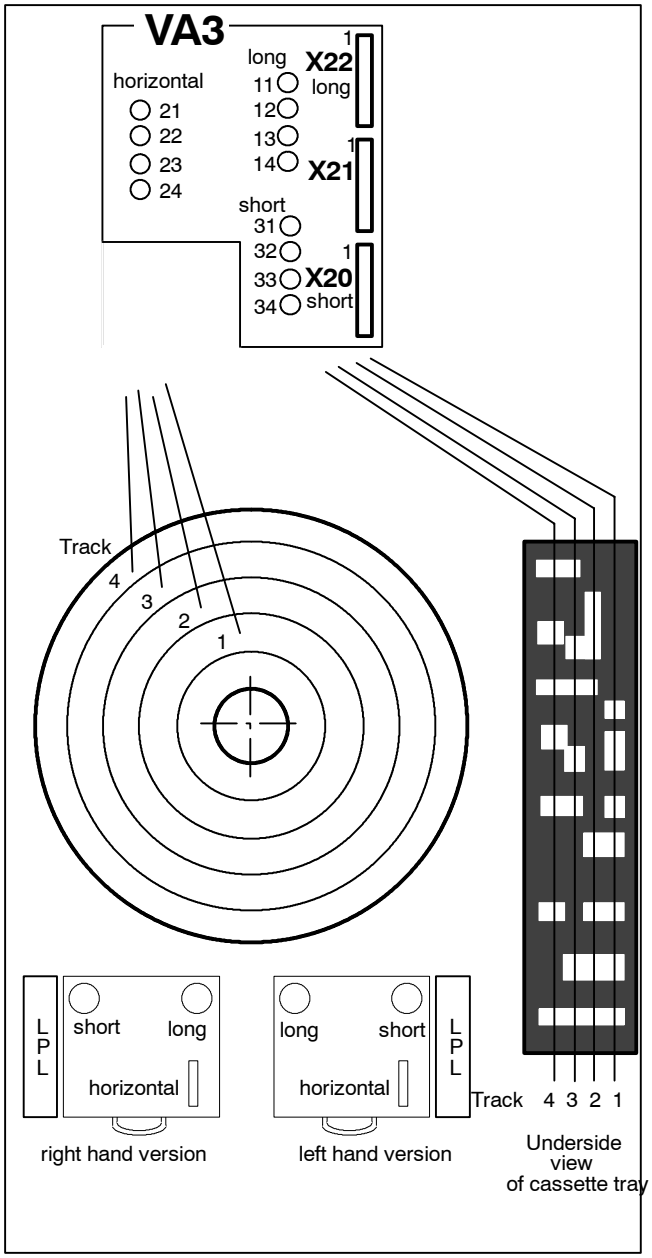
8.1. Location of components

Track	long	hor.	short
1	H11	H21	H31
2	H12	H22	H32
3	H13	H23	H33
4	H14	H24	H34





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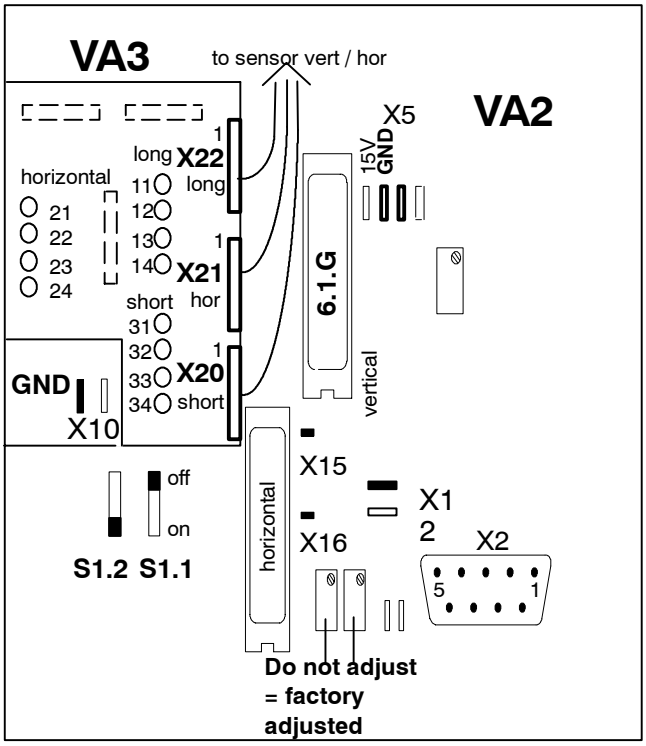
8.2. Layout of VA3

- Disconnect from VA3
  - X20
  - X21
  - X22
- Connect the VA3 to the free socket.
- Connect the unplugged cables to the specified sockets of VA3.
- Exchange the vertical PROM 6.1.G.



8.3. Layout of VA2

Programming of inch/metric on VA2:

S1.1 = OFF = inch (")*

S1.1 = ON = metric (cm)* -> default for Eleva systems

S1.2 = always ON

Reference point (GND) : X10

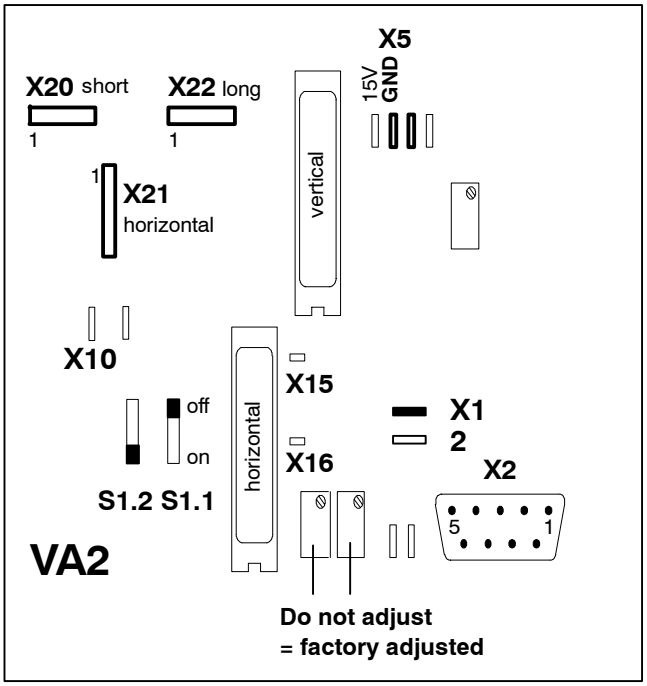
Analogue output horizontal : X16

Analogue output vertical : X15

Comp. threshold = 11.3 V ± 0.1 V : X12

*If S1.1 is in an incorrect position, the 11x14" or 10x12" is displayed as:

1) 11x14" reads 12x14"
2) 10x12" reads 9.5x12"
3) 9.5x12" reads 10x12"



Note:

For X15/X16

If the logical level used to address the E-PROM is not a recognized address, the output at points X15/X16 is 0V! This 0V can also be viewed using "show analogue" via VT 100 at the bucky controller side.

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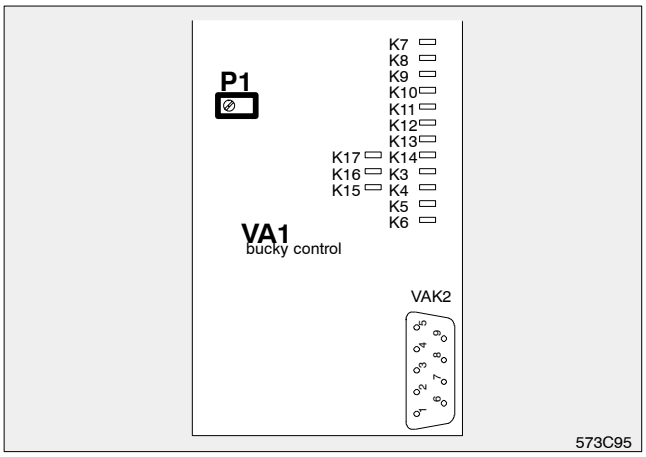
9. Set the bucky exposure delay

The exposure must be made not until 120ms ... 150ms after the grid magnet has dropped out to avoid that the release of the exposure coincides with the point of reversal of the bucky grid in case of short-time exposures.

Due to the different exposure delay times of the different generator types the total delay time must be adjusted at the bucky tray.

- Adjust delay time by the potentiometer **VA1 P1**.
- Remove the upper covers of the bucky unit.

Generator Type	Generator delay time ms
Velara	3 - 12
OPTIMUS	3 - 12
SCP	8 - 15
MEDIO CP/CPH	3 - 20
MCM	8 - 15
MM 80/85	15 - 25
MM 100/150	10 - 22
SM 40/70	40 - 50
SM 80/100	21 - 39
MEDIO 51	40 - 60



9.1. Fine adjustment of delay time

- Measure the delay time between $\overline{21}$ (XGRDEX) and $\overline{20}$ (RQXGEX) with an oscilloscope on VA1-K2:3 and K2:4.

9.2. Check the delay time by test exposures

To do the adjustment of exposure delay time preworks are necessary for access to the anti scatter grid of

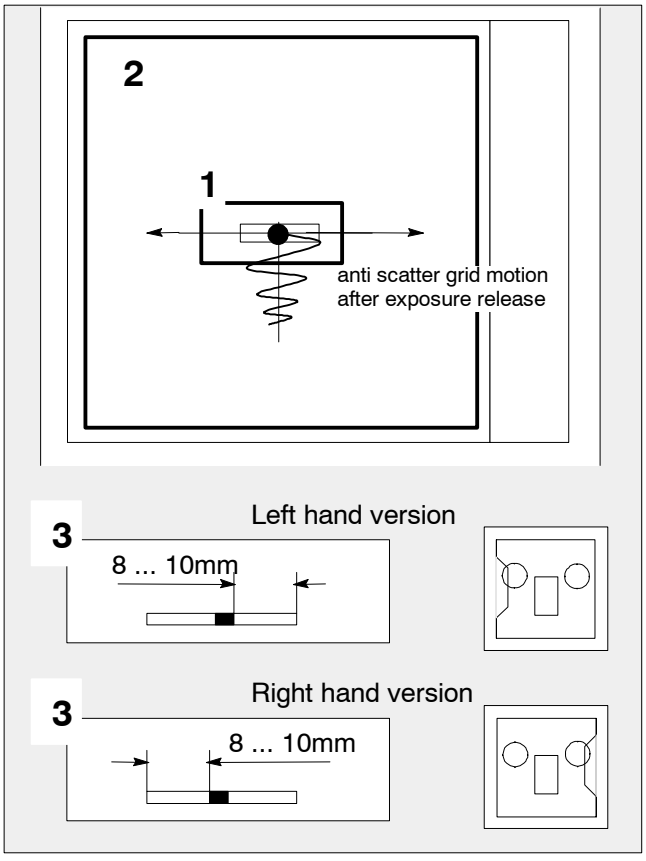
bucky table

- Remove the table top
- Check the delay time by test exposure
  - Lay the lead plate **1** on the grid **2**, fix with a piece of adhesive tape.
  - Make two exposures (see table) on the same film.
    The exposure will shown a spot and a bar **3**.

Exposure	Exposure time [sec]	[kV]	[mA]	Focus [mm]
1	0.5	60	15	0.6
2	0.02	125	25	0.6

- Measure the distance as shown in the figure **3**, respect the wall stand version

- If necessary increase or decrease exposure time by the potentiometer VA1 P1.



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10. Cassette formats

10.1. Cassette program for INALFA bucky units with format sensing - centric positioning

	Film size [cm]	Film size [inch]	Displayed as [cm]	Displayed as [inch]	Remark, tested at site
1	13 x 18		13 x 18	5 x 7	
1a	18 x 13		18 x 13	7 x 5	
2		5 x 7	13 x 18	5 x 7	
2a		7 x 5	18 x 13	7 x 5	
3		6.5 x8.5	17 x 22	6.5 x 8.5	
3a		8.5 x 6.5	22 x 17	8.5 x 6.5	
4	18 x 24		18 x 24	7 x 9.5	
4a	24 x 18		24 x 18	9.5 x 7	
5	18 x 43		18 x 43	7 x 17	
5a	43 x 18		43 x 18	17 x 7	
6		7 x 17	18 x 43	7 x 17	
6a		17 x 7	43 x 18	17 x 7	
7		8 x 10	20 x 24	8 x 10	
7a		10 x 8	24 x 20	10 x 8	
8	20 x 40		20 x 40	8 x 16	
8a	40 x 20		40 x 20	16 x 8	
9	24 x 24		24 x 24	9.5 x9.5	
10		9.5 x9.5	24 x 24	9.5 x 9.5	
11	24 x 30		24 x 30	9.5 x12	
11a	30 x 24		30 x 24	12 x 9.5	Using cassettes 11" or 24 cm, displayed size is 30 cm x 25cm / 12" x 10"
12		10 x 12	25 x 30	10 x 12	
12a		12 x 10	30 x 25	12 x 10	Using cassettes 10" or 24 cm, displayed size is 12" x 9.5" / 30 cm x 24 cm
13		11 x 14	28 x 35	11 x 14	
13a		14 x 11	35 x 28	14 x 11	Using cassettes 11" or 30 cm, displayed size is 14" x 12" / 35 x 30 cm
14	30 x 30		30 x 30	12 x 12	
15	30 x 35		30 x 35	12 x 14	
15a	35 x 30		35 x 30	14 x 12	Using cassettes 11" or 30 cm, displayed size is 35 cm x 28 cm / 14" x 11"
16	30 x 40		30 x 40	12 x 16	
16a	40 x 30		40 x 30	16 x 12	
17	35 x 35		35 x 35	14 x 14	
18		14 x 14	35 x 35	14 x 14	
19	35 x 43		35 x 43	14 x 17	
19a	43 x 35		43 x 35	17 x 14	
20		14 x 17	35 x 43	14 x 17	
20a		17 x 14	43 x 35	17 x 14	
21	40 x 40		40 x 40	16 x 16	

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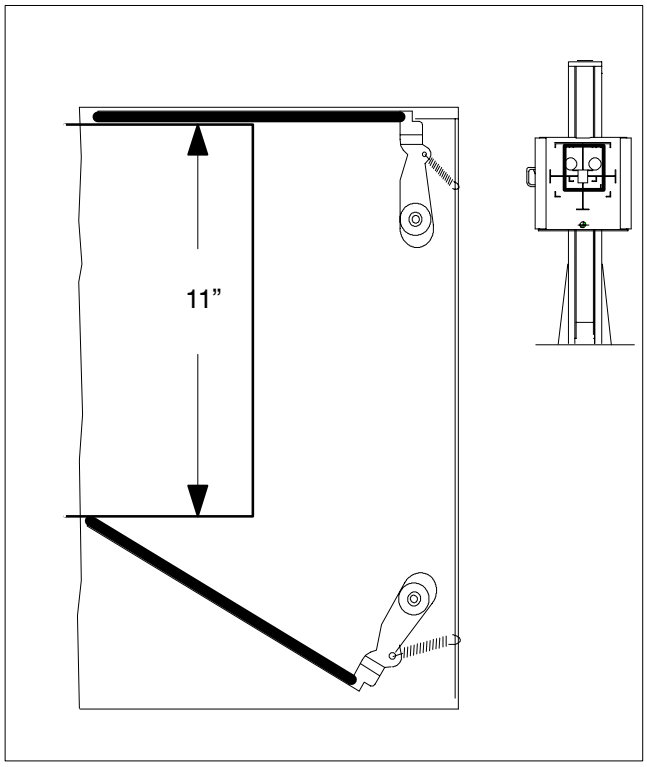
10.2. Cassette program for INALFA bucky units with format sensing - eccentric positioning

Note:
The smallest detectable vertical cassette size is 11" with eccentric positioning.



	Film size [cm]	Film size [inch]	Displayed as [cm]	Displayed as [inch]	Remark, tested at site
8a	40 x 20		40 x 20	16 x 8	
11a	30 x 24		30 x 24	12 x 9.5	
12a		12 x 10	30 x 25	12 x 10	
13		11 x 14	28 x 35	11 x 14	
13a		14 x 11	35 x 28	14 x 11	
14	30 x 30		30 x 30	12 x 12	
15	30 x 35		30 x 35	12 x 14	
15a	35 x 30		35 x 30	14 x 12	
16	30 x 40		30 x 40	12 x 16	
16a	40 x 30		40 x 30	16 x 12	
17	35 x 35		35 x 35	14 x 14	
18		14 x 14	35 x 35	14 x 14	
19	35 x 43		35 x 43	14 x 17	
20		14 x 17	35 x 43	14 x 17	
21	40 x 40		40 x 40	16 x 16	

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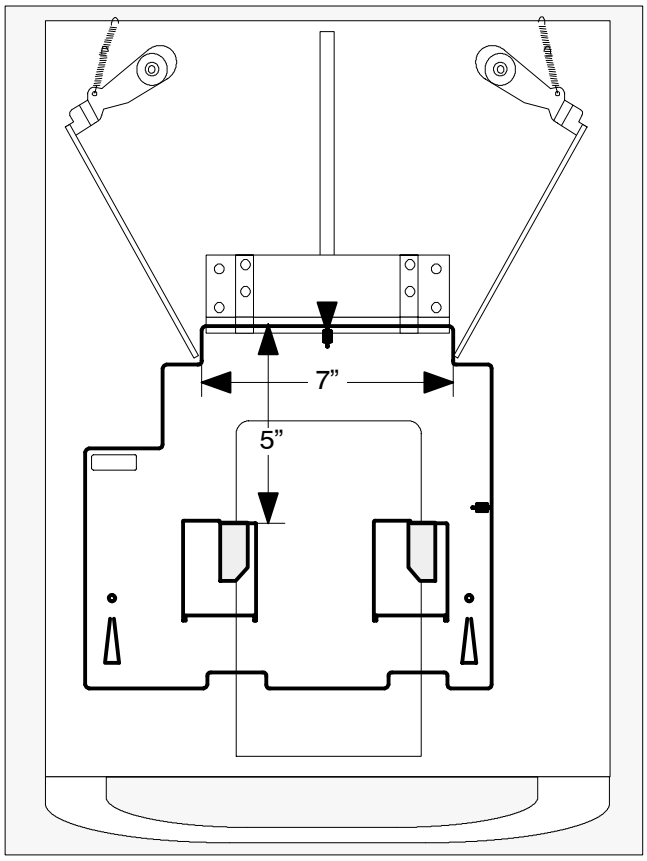
10.3. Template use

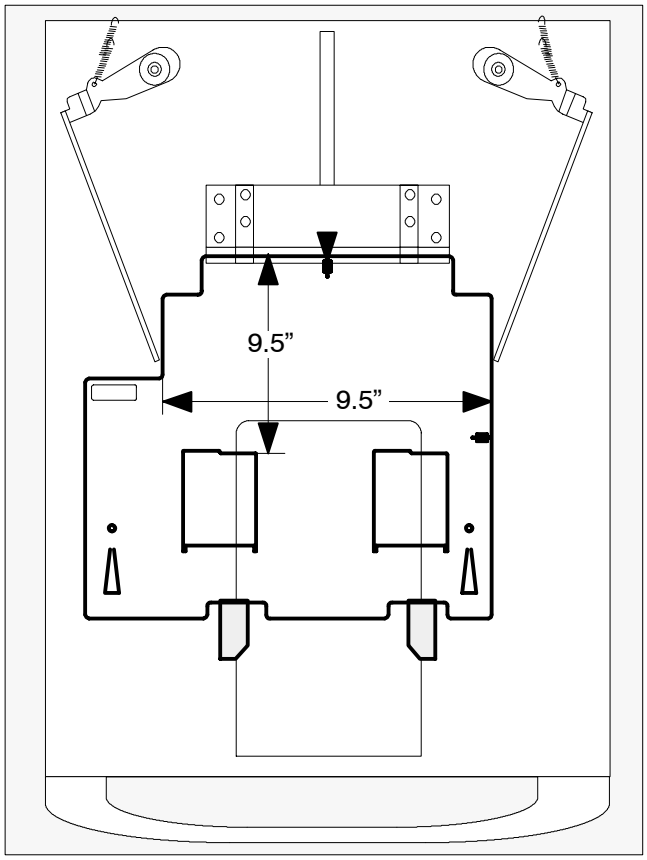
Test of 5” x 7” cassette size

- Insert the template as shown in the figure.
  - Center the template with respect to the mark.
- If the test fails, adjustment is necessary.



Test of 9.5” x 9.5” cassette size

- Insert the template as shown in the figure.
  - Center the template with respect to the mark.
- If the test fails, adjustment is necessary.



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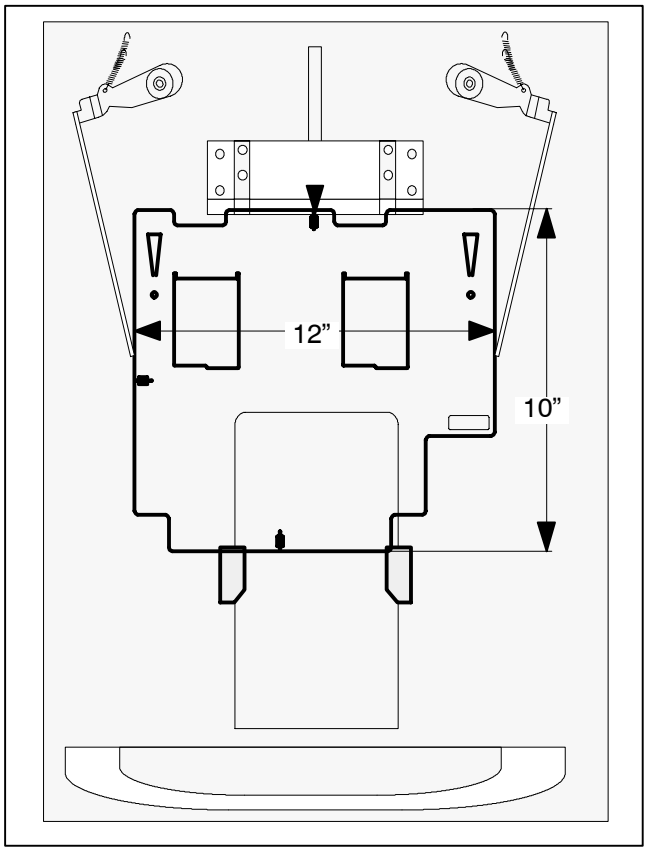
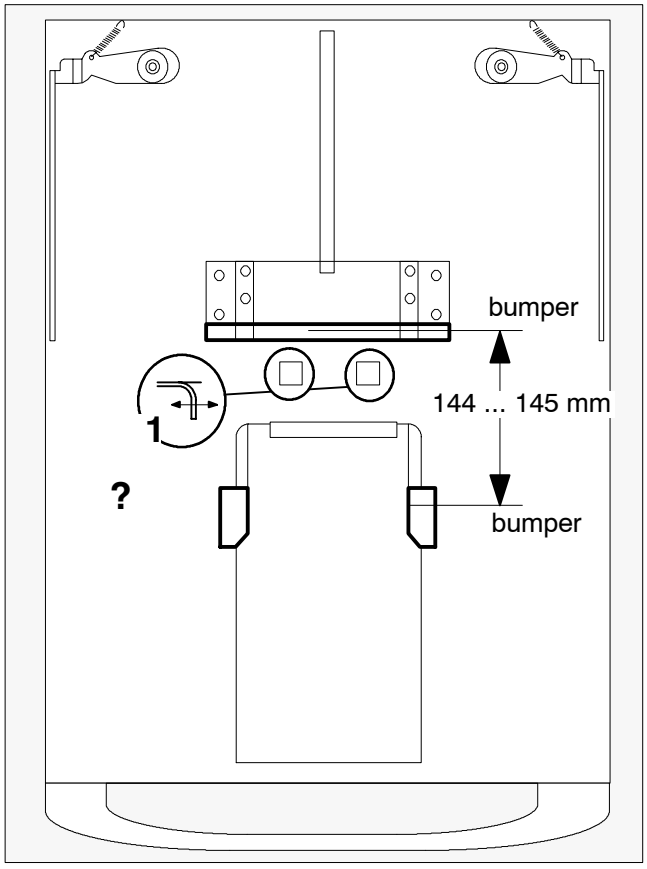
Test of 10” x 12” cassette size

- Insert the template as shown in the figure.
  - Center the template with respect to the mark.
- If the test fails, adjustment is necessary.



10.4. Adjustments for optimum recognition of all cassette formats

- Remove the cassette tray from the cassette loader.
- Remove the cassette loader.
- **When no cassette** is inserted but a cassette size is recognized, check the distance between the bumpers.
  To modify the distance bend the stoppers (**1**).



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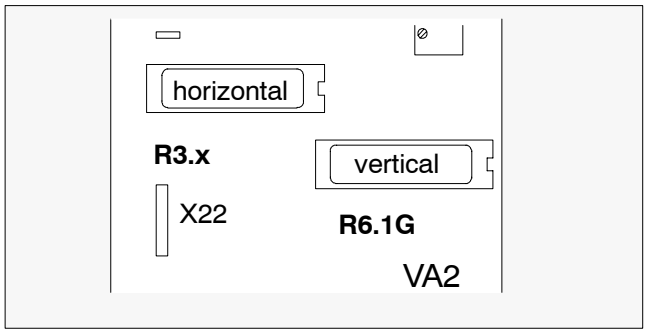
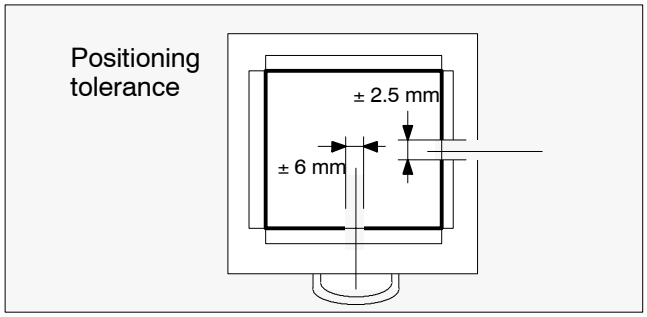
11. Firmware releases

- Firmware
  vertical R6.1G
  horizontal R3.x



- Encoder disks
  The bit pattern of the encoder disks 'short' and 'long' are symmetrical with repect to each other.
  The encoder disks are marked as 'short' or 'long'.

- Positioning tolerance.
  - ± 6 mm vertical allowable variation
  - ± 2.5 mm horizontal allowable variation



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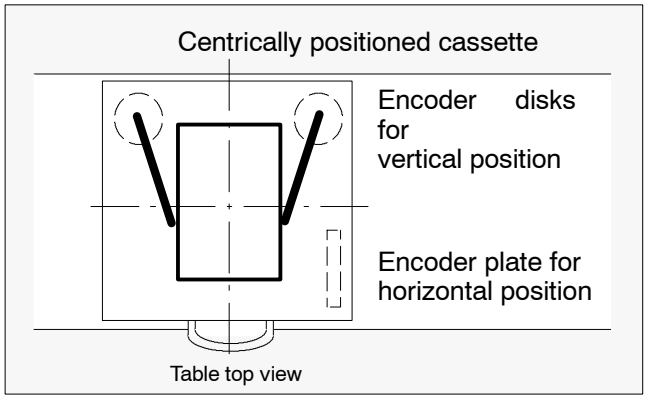
12. Cassette positions

12.1. Centric position

The cassette must be positioned symmetrically, respect the allowable variation.


Centrically positioned cassette
Encoder disks for vertical position
Encoder plate for horizontal position
Table top view

Metric size [cm]	Imperial size [”]	Voltage [V] at VA2 X2:5/6	Signals at the measuring points for **ENCODER DISKS** long = short				Established values shown on the INALFA test tool long = short				Signals at the measuring points for **ENCODER PLATE** horizontal				Established values shown on the INALFA test tool horizontal			
			X20/22: 3	6	5	4	X20 or X22: 3	6	5	4	X21: 3	6	5	4	X21: 3	6	5	4
		+/-0.5V	Track 1	2	3	4	Track 1	2	3	4	Track 1	2	3	4	Track 1	2	3	4
no cassette		0.0	**L**	**H**	**L**	**L**					**L**	**L**	**L**	**L**				
13	5	2.6	**L**	**H**	**H**	**H**					**L**	**L**	**H**	**H**				
15	6	3.0	**L**	**H**	**H**	**L**					**L**	**H**	**L**	**L**				
	6.5	3.3	**L**	**H**	**L**	**L**					**L**	**H**	**L**	**H**				
18	7	3.6	**L**	**H**	**L**	**H**					**L**	**H**	**H**	**L**				
20	8	4.0	**L**	**L**	**L**	**H**					**L**	**H**	**H**	**H**				
	8.5	4.3	**L**	**L**	**L**	**L**					**H**	**L**	**L**	**L**				
24	9.5	4.8	**L**	**L**	**H**	**L**					**H**	**L**	**L**	**H**				
	10	5.1	**L**	**L**	**H**	**H**					**H**	**L**	**H**	**L**				
28	11	5.6	**H**	**L**	**H**	**H**					**H**	**L**	**H**	**H**				
30	12	6.0	**H**	**L**	**H**	**L**					**H**	**H**	**L**	**L**				
35	14	7.1	**H**	**L**	**L**	**L**					**H**	**H**	**L**	**H**				
40	16	8.0	**H**	**L**	**L**	**H**					**H**	**H**	**H**	**L**				
43	17	8.6	**H**	**H**	**H**	**H**					**H**	**H**	**H**	**H**				

Note:
All other cassette formats are not recognized!

H = 11.4...14.0 V

L = 0.6... 1.0 V

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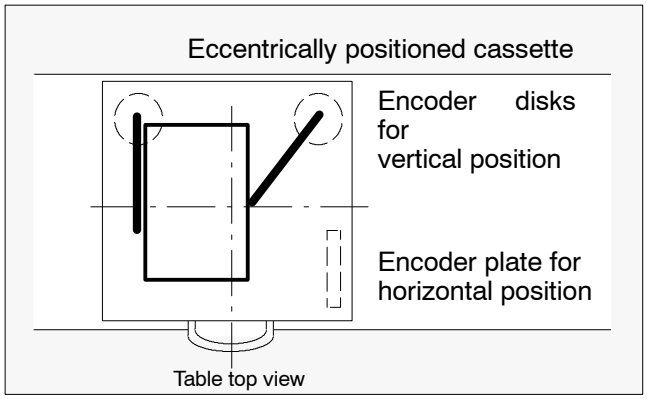
12.2. Eccentric position

The cassette must be positioned fully to the left or right side, respect the allowable variation.

Signals at the measuring points for the **encoder plate horizontal** see table of Centric Position.


Eccentrically positioned cassette
Encoder disks for vertical position
Encoder plate for horizontal position
Table top view

Metric size [cm]	Imperial size [”]	Voltage [V] at VA2 X2:5/6	Signals at the measuring points for **ENCODER DISKS** long or short	Established values shown on the INALFA test tool
			X20 or X22: 3 6 5 4	X20 or X22: 3 6 5 4
		± 0.3V	Track 1 2 3 red 4	Track 1 2 3 red 4
no	cassette	0.0	**L L L L**	
13	5		not possible	
15	6		not possible	
	6.5		not possible	
18	7		not possible	
20	8		not possible	
	8.5		not possible	
24	9.5		not possible	
	10		not possible	
	11	5.6	**L H H H**	
	12	6.0	**L H H L**	
	12	6.0	**L H L L**	
	12	6.0	**L H L H**	
	12	6.0	**L L L H**	
	14	7.1	**L L H H**	
	14	7.1	**H L H H**	
35	14	7.1	**H L H L**	
	16	8.0	**H L L L**	
	17		not possible	
			The track code of the other encoder disk (long or short) is always **H H L H**	

H = 11.4...14.0 V

L = 0.6... 1.0 V

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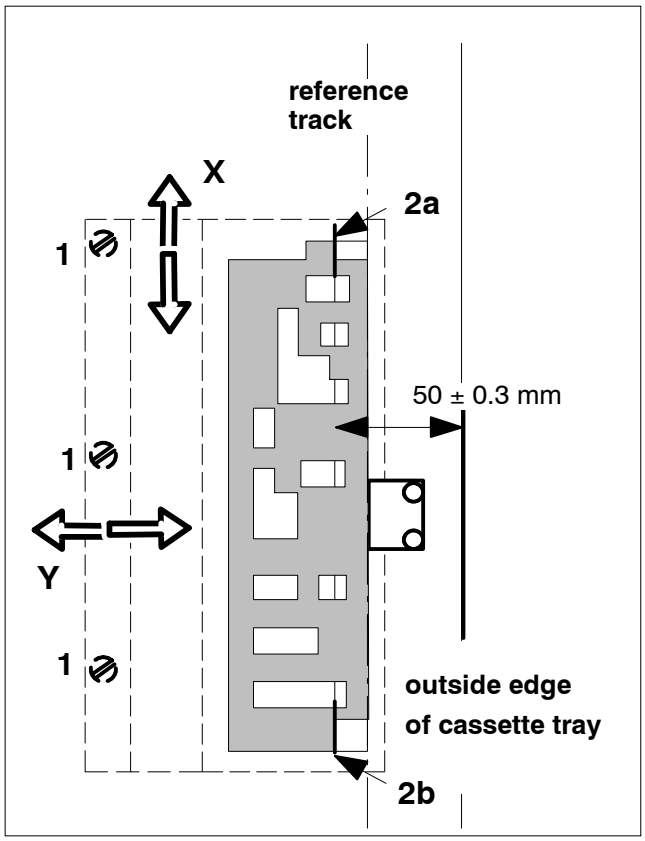
13. Adjustments and replacements

13.1. Adjustment of the horizontal measuring disk

- Insert the tray in the bucky unit.
- Extend the bucky unit with tomo sub-D service cables to VA–X1 and VA–X2 to allow easy access to the components.
- Mark the position of the horizontal plate (code no. 4512 131 17821) in X-direction.
- Replace the horizontal plate.
- Measure the distance between the cassette tray and the reference track.
  Distance = 50 mm (± 0.3 mm).



Y-adjustment

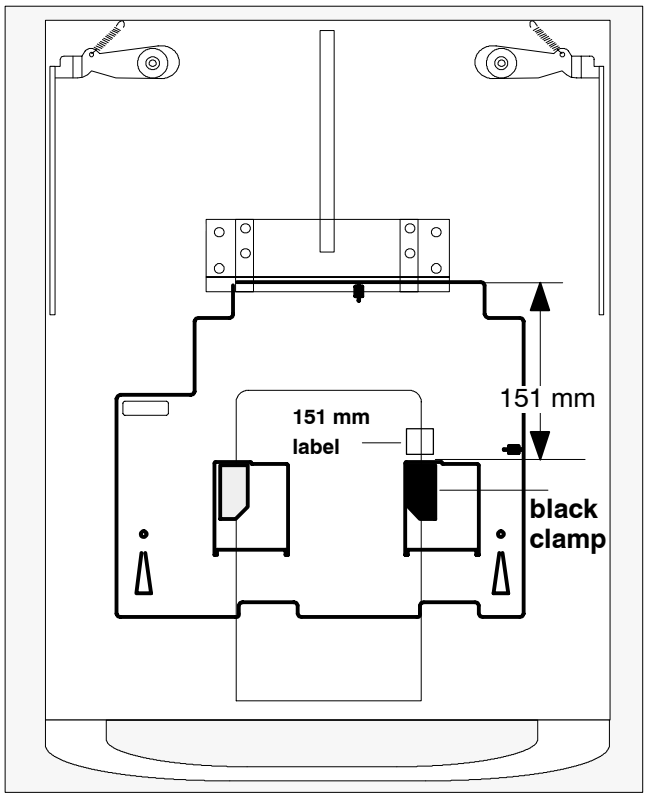
Adjustment of the horizontal encoder plate

- Measure the distance between the cassette tray and the reference track.
  Distance = 50 mm (± 0.3 mm).
- Measure the distance at **2a** & **2b**
  - without inserted cassette
  - with a horizontally inserted 14” cassette.
- Adjust the encoder plate in Y-direction as needed.
  - Mark the X-position of the plate.
  - Loosen screws (**1**) to adjust.
- After this adjustment be sure that the sensors are centered.

X-adjustment

Adjustment of the 151 mm position

- Remove the bucky module for full access.
- Extend the cables on VA1 and VA2 with the sub-D extension cables.
- Position the template with the black clamp aligned to the 151 mm label in the tray.
- Mark the Y-position of the encoder plate.
- Loosen screws (**1**) and displace the horizontal encoder in **X**-direction until relay RY2 for recognition on the board VA1” energizes audibly.
  Tracks 3/4 have to be adjusted at the switching point (the LEDs 21 and 22 just flare up).
- Fasten screws (**1**).
- Check again the Y-direction of the encoder plate.



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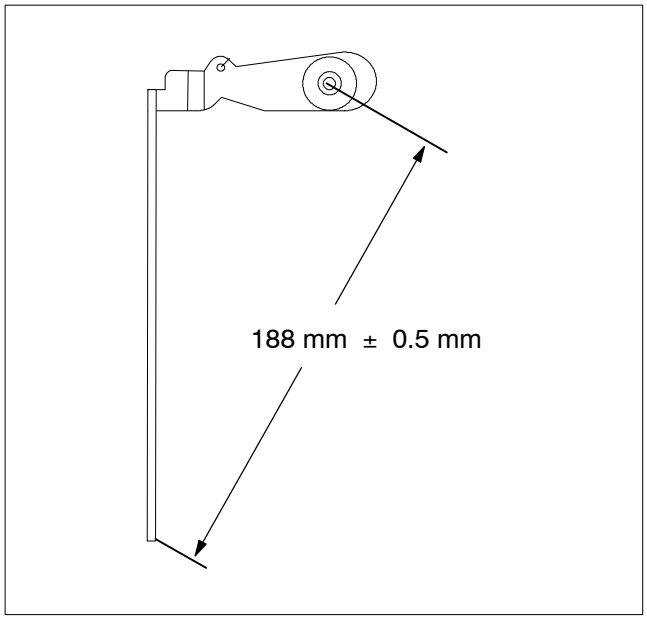
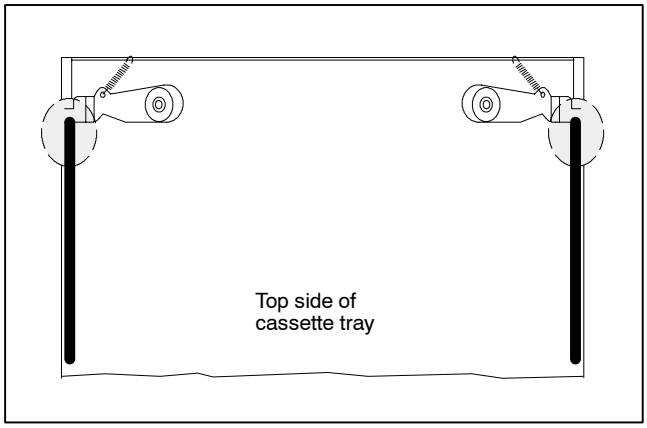
13.2. Adjustment of the vertical levers long/short

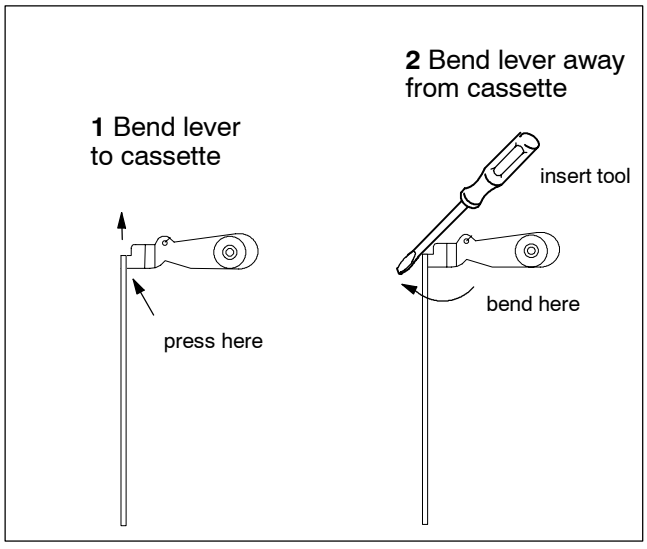
- Check both lever arms.
  - The distance between the pivot point and the sensing arm – detection point – must be **188 ± 0.5 mm**.



Note:
The sensing arm must be mechanically adjusted only in the marked area. After that, check whether the arm is fully supported by the sides of the tray.



How to bend the lever



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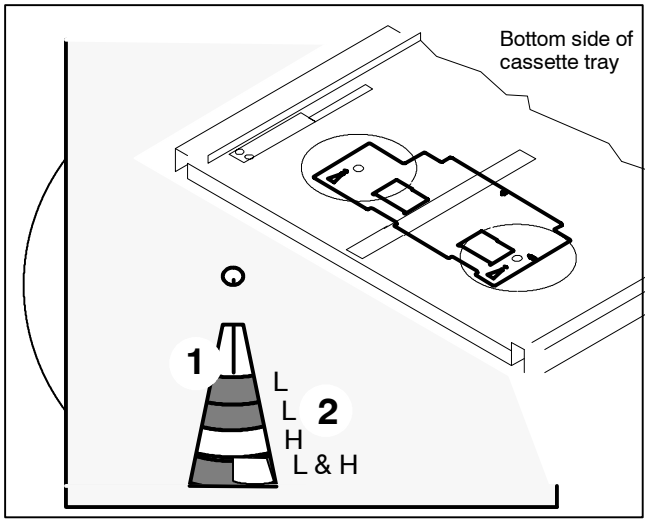
13.3. Adjustment of the vertical encoder wheels

1) Test with 9.5” cassettes

- Insert a cassette 9.5” x 12” (24 cm x 30 cm), 9.5” in vertical direction.
- Position the template (printed side down).
- The 9.5” line (**1**) must be visible at the center of the triangle (when the levers touch the cassette).
- The bit pattern (**2**) for 9.5” must be visible as shown in the triangle of the template.
- If not, bend the levers carefully (see below).
- Check the position of both encoder disks.



2) Test with 17” cassettes

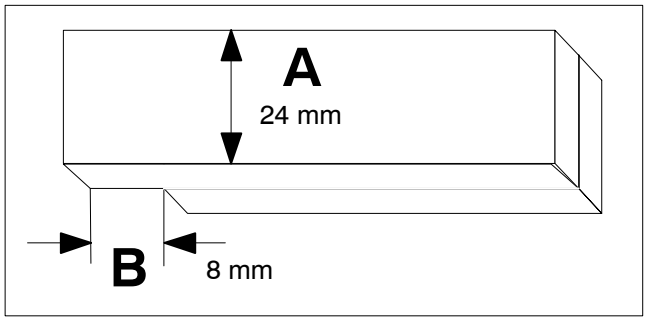
With 17” cassettes in vertical position, only “white” must appear in the template triangle for all tracks (both disks).

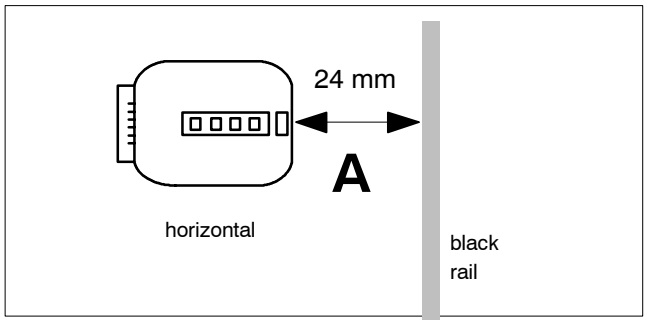
13.4. Replacement and adjustment of horizontal sensors

- Mark the position.
  - If position is not marked, use the template tool (code No. 4512 131 17831).
- Remove the sensor.
- Position the new MUX sensor, see attached drawing.

  The distance between sensor housing and rail must be 24 mm ± 0.1 mm.

  Fix the sensor with glue.





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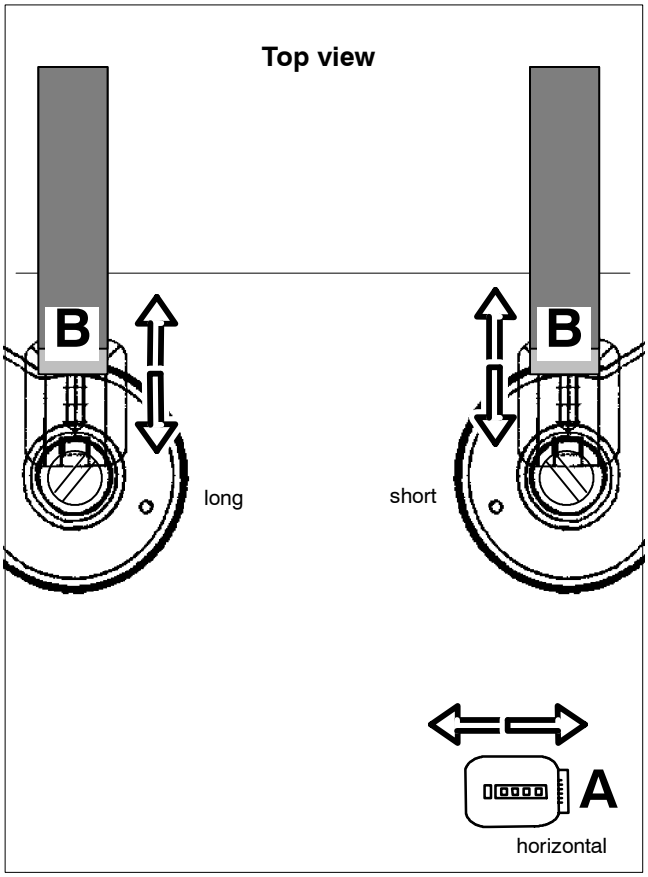
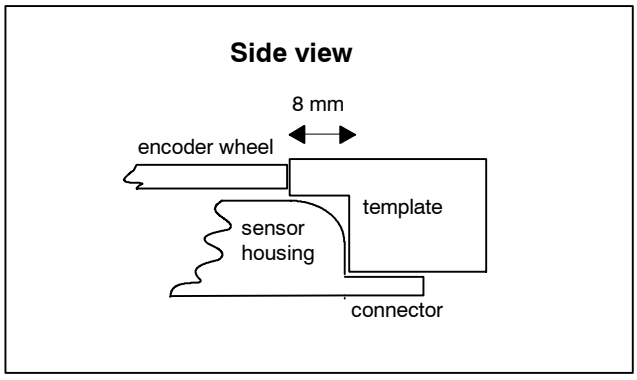
13.5. Replacement of vertical short / long sensors

- Mark the position.
  - If position is not marked, use the template tool.
- Remove the sensor.
- Position the new MUX sensor, see attached drawing. The distance between sensor housing and encoder wheel must be 8 mm ± 0.1 mm.
- Fix the sensor with glue.

Note:
Make sure that the green plugs of all sensors are connected properly.





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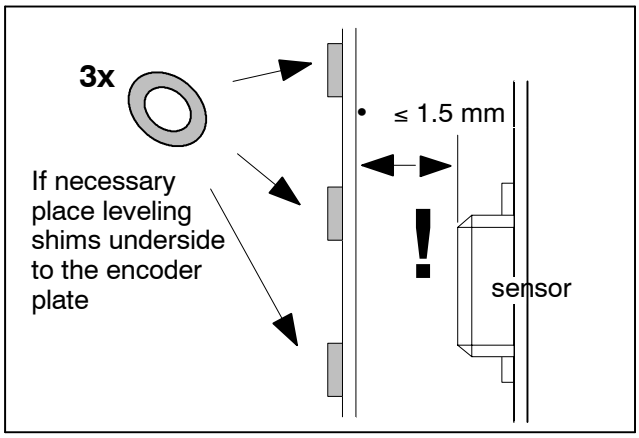
13.6. Distance adjustment of the horizontal encoder plate with respect to the sensor

Note:
Do not scratch the sensors!

- Check the distance = 1.0 mm ± 0.5 mm between the horizontal encoder plate and the sensor. Adjust the distance with leveling shims.



13.7. Replacement of the cassette support plate

Caution
The cassette support plate is only needed for bucky wallstand and must be removed for table.

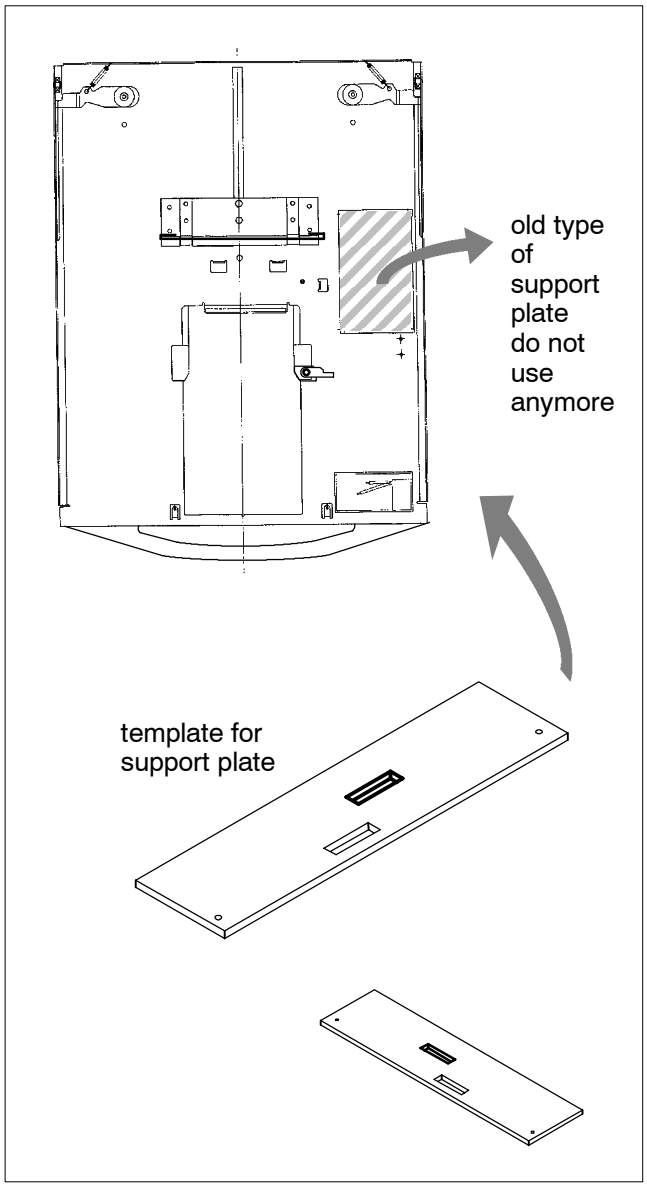
Note:
*The new support plate has an additional stop position for 40 cm cassettes. If **no** 40 cm cassette is used, remove the stop mechanism spring and stopper for this "40 cm" position and replace the old (plastic) support plate.*

If 40 cm cassettes are used, proceed as follows:

- Remove the cassette tray from the wallstand.
- Release the cassette holder.
- Remove the cassette support plate from the bottom of the tray.
- Remove the old cassette support plate made of plastic.
- Drill two holes ∅4 mm to file rectangular holes.
- Position the template with both reference holes in accordance with the fixing holes of the support plate.
- Latch the cassette holder.

If **no** 40 cm cassettes are used, remove the cam for this cassette type.

- Mark the new 40 cm position and drill 3 holes ∅4 mm.
- File the rest so that the new stop cam fits into the new stop slot at tray side.
- Install the new support plate.



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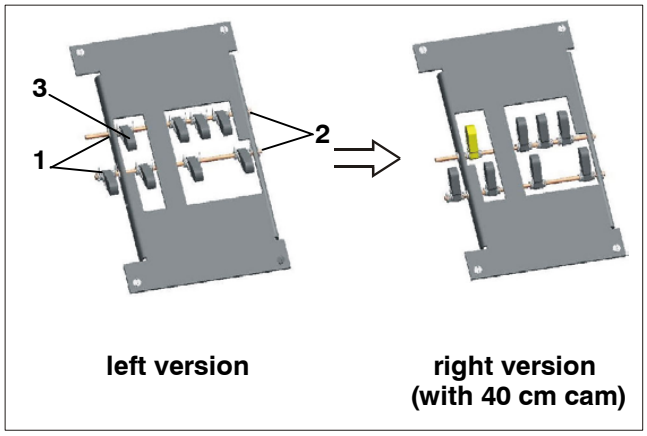
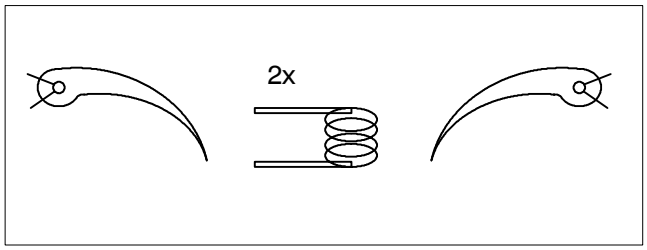
13.8. Conversion of the cassette support plate from left to right version

- Position the cassette support plate.
- Remove on the left hand side the circlips (**1**) of both axes.
- Carefully pull both axes (**2**) out of the holes .
- The cam (**3**) is only used for 40 cm cassettes.
  If it is not used, remove it.
- Turn the cams through 180°.
- Insert both axes into the holes on the opposite side.
- Check the correct position of the torsion springs.



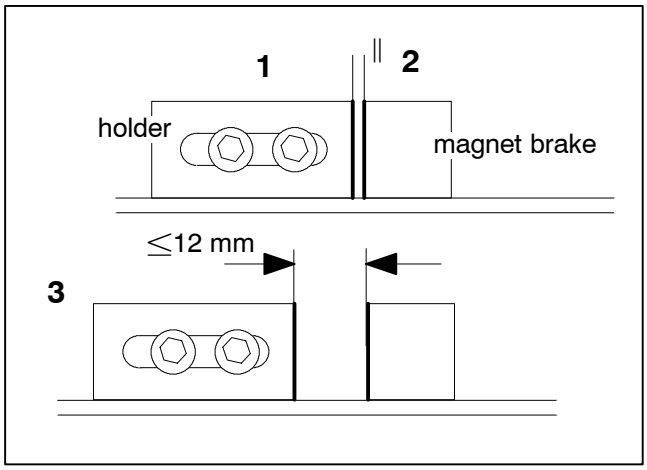
13.9. Install the new torsion springs

- Remove the old torsion springs.
- Install the new torsion springs.

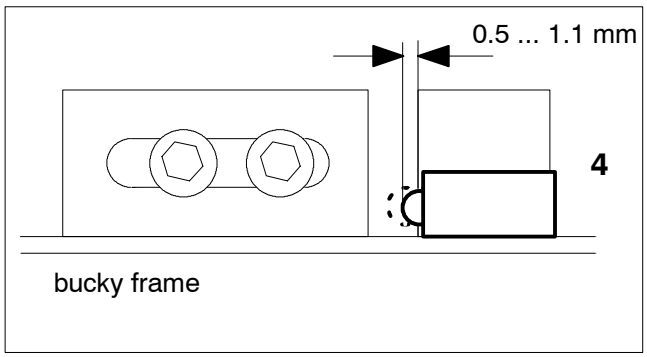


13.10. Adjustment of grid release switch

- Switch ON the power supply for the INALFA cassette loader.
- Check paralism of the holder (**1**) with respect to the attracted magnet brake (**2**).
- Switch OFF the power supply for the INALFA cassette loader. The distance between the holder and the magnet brake should be ≤12 mm (**3**) .
- Check the switch position.



– The distance of the magnet brake with respect to the switching over point must be 0.5 ... 1.1 mm (**4**).



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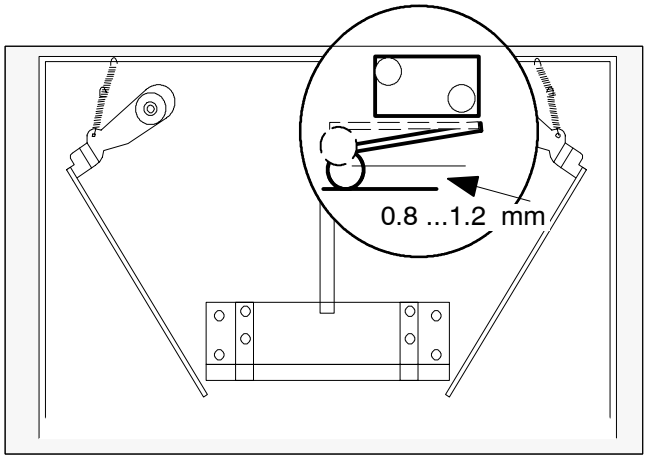
13.11. Adjustment of cassette present switch

- Check the cassette present switch.
- While the cassette tray is inserted, the spring plate must be moveable 0.8 ... 1.2 mm.



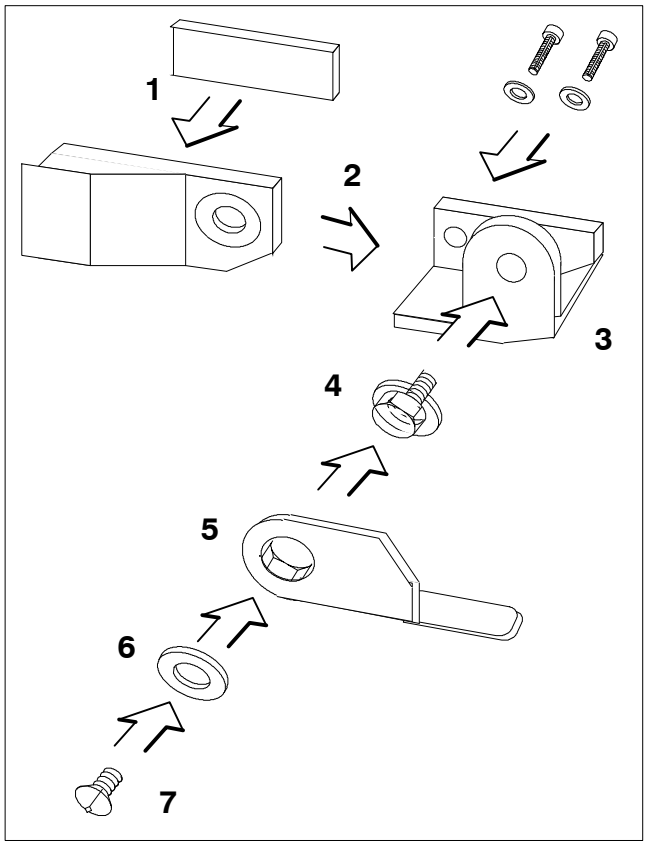
13.12. Replacement of the fixing block

Note:
The fixing block is only required for bucky wallstand.

Bucky wallstand - left-hand version fixing block: 4512 129 55501
right-hand version fixing block: 4512 129 55511

Assembly

- Assemble the removed fixing block with the clamp:
  - Insert the clamping plate (**1**) in the fixing block (**2**).
  - Insert this assembly in the clamping block (**3**).
  - Fix these parts to the cassette loader with the two screws supplied.
  - Insert the clamping screw (**4**).
- Install the clamping lever (**5**) in such a way that it holds the open cassette tray in its position when the lever is tightened.



Operation

- Insert a cassette.
- Lock the tray with the clamping lever.

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14. Function check

14.1. Check of cassette size with the template

The following cassette sizes must be recognized with the template in both directions:

- 9.5" x 12"
- 10" x 12"
- 9.5" x 9.5"
- 7" x 5"

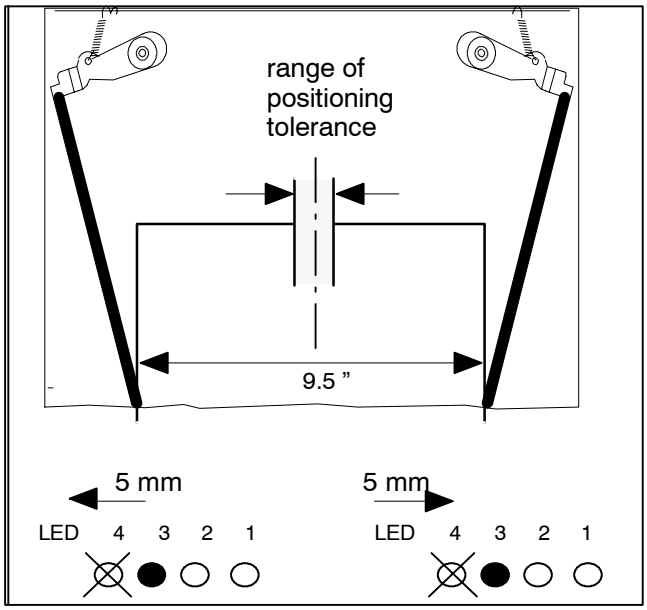
Additional check with all available cassettes as used at site in centric and eccentric position.

Note:
Only cassettes with size = 30 cm/12" are detected in eccentric positions.

14.2. Check of size recognition vertical

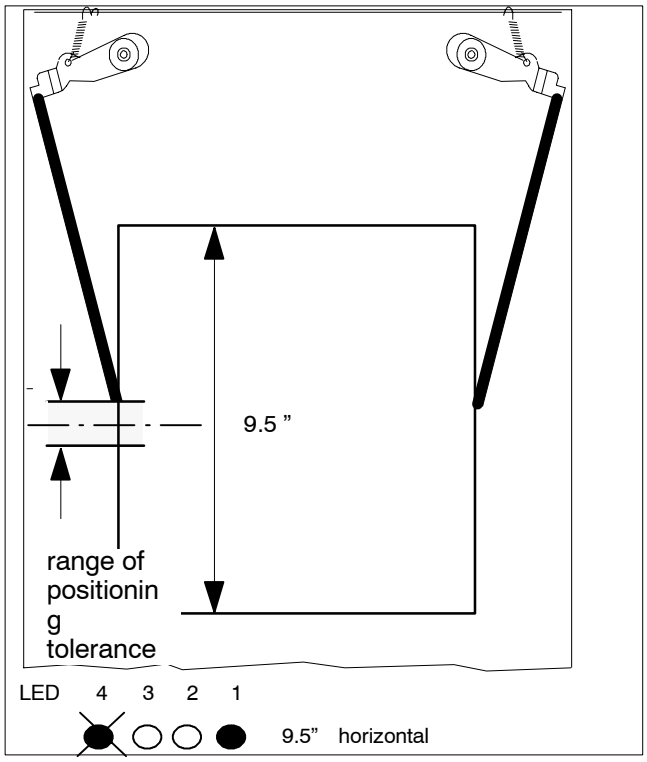
- Check with 9.5" cassette

- Insert a cassette 9.5 x 9.5" = 24 cm x 24 cm = **vertical**.
- The cassette size must be recognized within a range of ± 4 mm out of center.
  See displayed value on on the control handle.



14.3. Check of size recognition horizontal

- Insert a cassette 9.5" x 12", 9.5" = **horizontal**.
- The cassette size must be recognized within a range of ± 2 mm out of center.
  See displayed value on the control handle.



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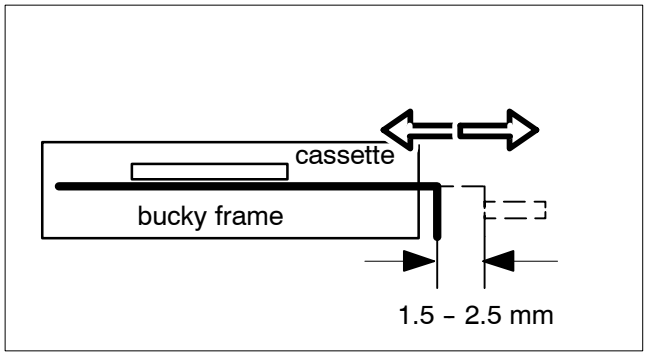
14.4. Switch point of cassette size recognition

The switch points of vertical and horizontal recognition of the cassette size must coincide when the cassette tray is inserted or removed. This switch point is 1.5–2.5 mm before the cassette tray reaches its final position in the bucky frame.



- Insert a cassette 7” x 5”,
  5” = **horizontal**

- Check that the cassette format is still recognized.

Note:
The cassette present switch must also be closed .

- If the cassette format is not recognized, check vertical and horizontal signal. Adjustment procedure must be repeated as described above.

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ANNEX

Troubleshooting procedure

To be successful in fixing the problems, follow up the test procedure step by step.

STEP 1: Check cassettes

- Are they damaged?
- Is correct size displayed at control handle?

STEP 2: Check programming

- Connect the PC to the bucky controller and start XSCOPE, resp. start Field Service Framework (FSF) for Eleva systems
- Check settings in the bucky unit: switch on VA2-board set to “inch” or “metric”?
- Check via program XSCOPE resp. FSF the following parameters:
  1. X-Scope/bucky Diag/System Config./Display units – metric / – imperial
     - FSF: Configuration / System control / User interface behavior / UI display unit – metric; imperial
  2. X-Scope/bucky Diag/Wallstand/Receptor offset = 0...10 mm (recommended value: 2 mm)
     - FSF: Configuration / Bucky CSWS / Collimator / Extra open wall bucky = 20 ... –20mm (rec. 2mm)
  3. X-Scope/bucky Diag/Table/Receptor offset = 0...10 mm (recommended value: 2 mm)
     - FSF: Configuration / Bucky CSWS / Collimator / Extra open table bucky = 20 ... –20mm (rec. 2mm)
  4. X-Scope/bucky Diag/System Config./Cassette sizes – metric / – imperial
     - FSF: Configuration / System control / Options / Stand and CS Cassette type – metric; imperial
- If a new bucky was installed, was the cassette sizing calibration in XSCOPE, resp. FSF performed after new bucky was installed?

Note:
Do not attempt to recalibrate bucky until it is known that the bucky is working properly. (= analogue outputs are correct for the inserted cassettes.)

We recommend that the cassette sizes be adjusted via XSCOPE, see XSCOPE/Adjustment/Cassette resp. via FSF.

Note:
Use the largest and smallest cassette, e.g. 35 x 43 cm resp. 18 x 24 cm for this procedure.
If a cassette of 18 x 24 cm is not available, use a cassette of next smaller or bigger size.

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STEP 3: Prior check

For this check some cassettes are needed which are in use in the hospital.

	What to do	Where to look at	Which results are expected	What to do if failed	For details see
3.1	• Insert a cassette centered in the bucky	control handle	display shows correct format	• Proceed with step 4	11.1
3.2	• Insert the cassette some mm outside the center mark	control handle	display shows correct format as long as the shift is acceptable (typically 5–10 mm)	• Proceed with step 4	11.2

STEP 4: Visual inspection of tray

Full access to the bucky unit is not necessary for inspection. For adjustments, full access is required.

	What to do	Where to look at	Which results are expected	What to do if failed	For details see
4.1	• Remove cassette tray from unit for inspection. Any damages visible?	levers bent?	not bent	• Proceed with step 4.2	12.2
		levers movement	Shall move easily, shall not stick	• Adjust screws on levers	12.2
		loose screws/parts visual check	all parts fixed	• Fasten loose screws and use Locktite!!	12.2
4.2	• Remove the tray. Insert a 9.5” cassette vertically. Insert template (printed side down) on cassette tray rear-side	Observe pattern in the triangles	The 9.5” lines shall be visible at the top of the triangle when levers touch cassette.	• Bend levers very carefully so that the required pattern appears in the triangle.	12.2
4.3	• Insert a cassette. When size is displayed, slightly pull out the tray by 1.5–2.5 mm	Observe the display on the control handle	Format still displayed	• Check cassette present switch. • Adjust horizontal encoder-plate or • go to step 5.	12.6
4.4	• When cassette is inserted and format displayed, move the tray in Z-direction	Observe the display on the control handle	Format still displayed	• Adjust horizontal encoder-plate • Go to step 5.	12.6
				Movement Z-direction	

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STEP 5: Sensor check

For this step full access to the bucky unit is necessary.

What to do		Where to look at	Which results are expected	What to do if failed	For details see
5.1	• Remove the tray	scratches on sensors or disks? Dust on sensors?	clean, without scratches	• Clean and check sensors, proceed with step 5.2	
5.2	• Check sensor supply voltage, all three sensors. Cassette present switch must be pressed to power up the LEDs of sensors	voltmeter between X10 Gnd and X20/X21/X22 pin 2 (yellow)	≥14.7 V ± 0.2 V	• Check power supply 15 V VA2 : X6 Trouble shooting power supply as needed.	8.2
5.3	• Check every track of every sensor	with voltmeter between Gnd and X20/X21/X22 – pin 3,4,5,6 (pink, white, grey, brown). Tray must be inserted for ”Cassette present”. Test with the largest cassettes = 43 cm in vert. and hor. direction	With 43 cm in vert./hor. direction, all 4 tracks are “H”. The high-level shall be >13.0 V	If one track fails and all others are ok, replace sensor. Otherwise check distance between sensor and horizontal encoder plate. If ok, replace sensor.	12.5 12.6
5.4	• Check distance sensor–encoder plate	distance hor.plate–sensor	1.0 mm ± 0.5 mm	• Adjust horizontal encoder plate	12.6

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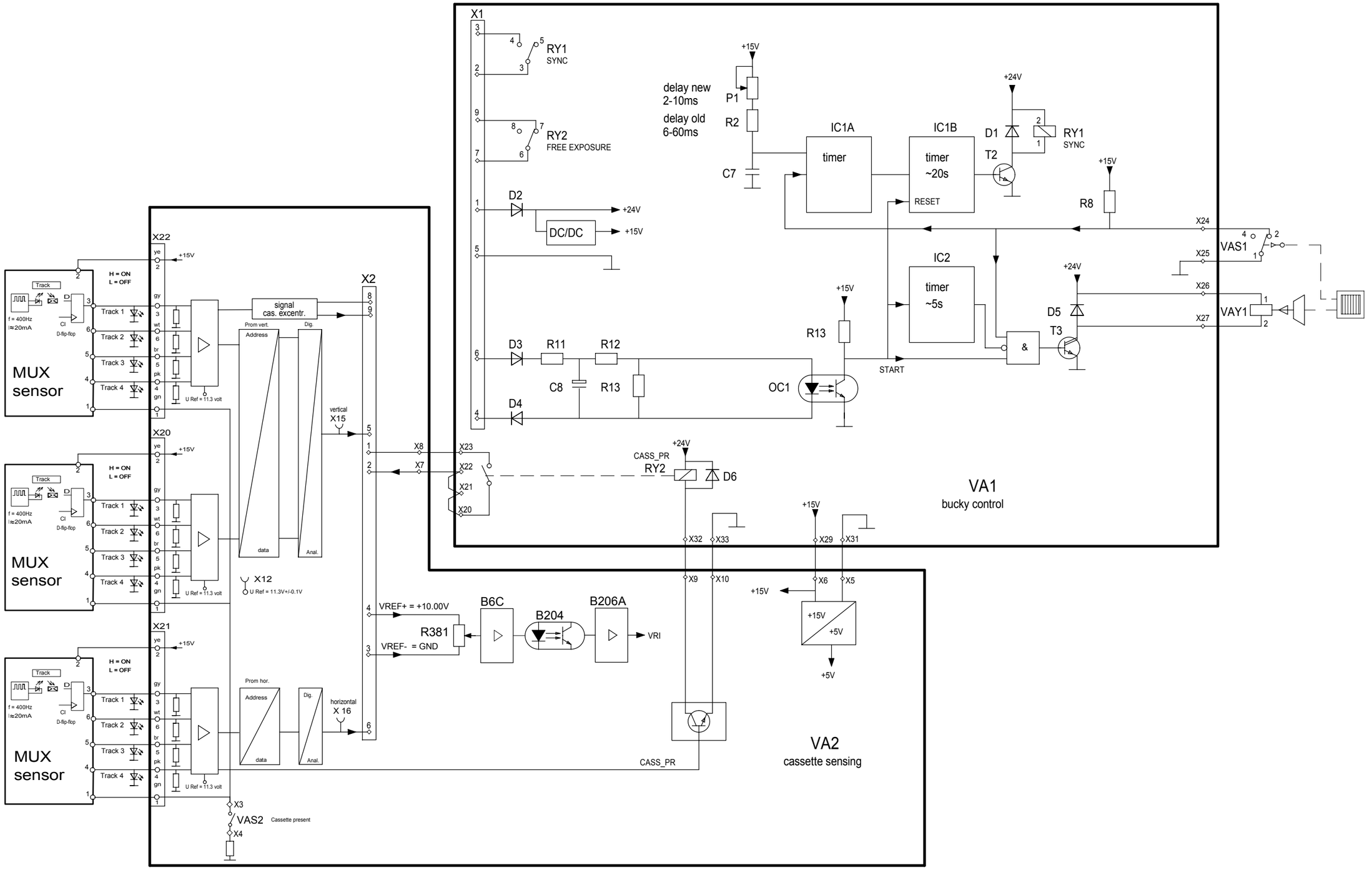

A2/A3 04-02-25 Schr.

bucky control and
bucky sensing
VA1, VA2

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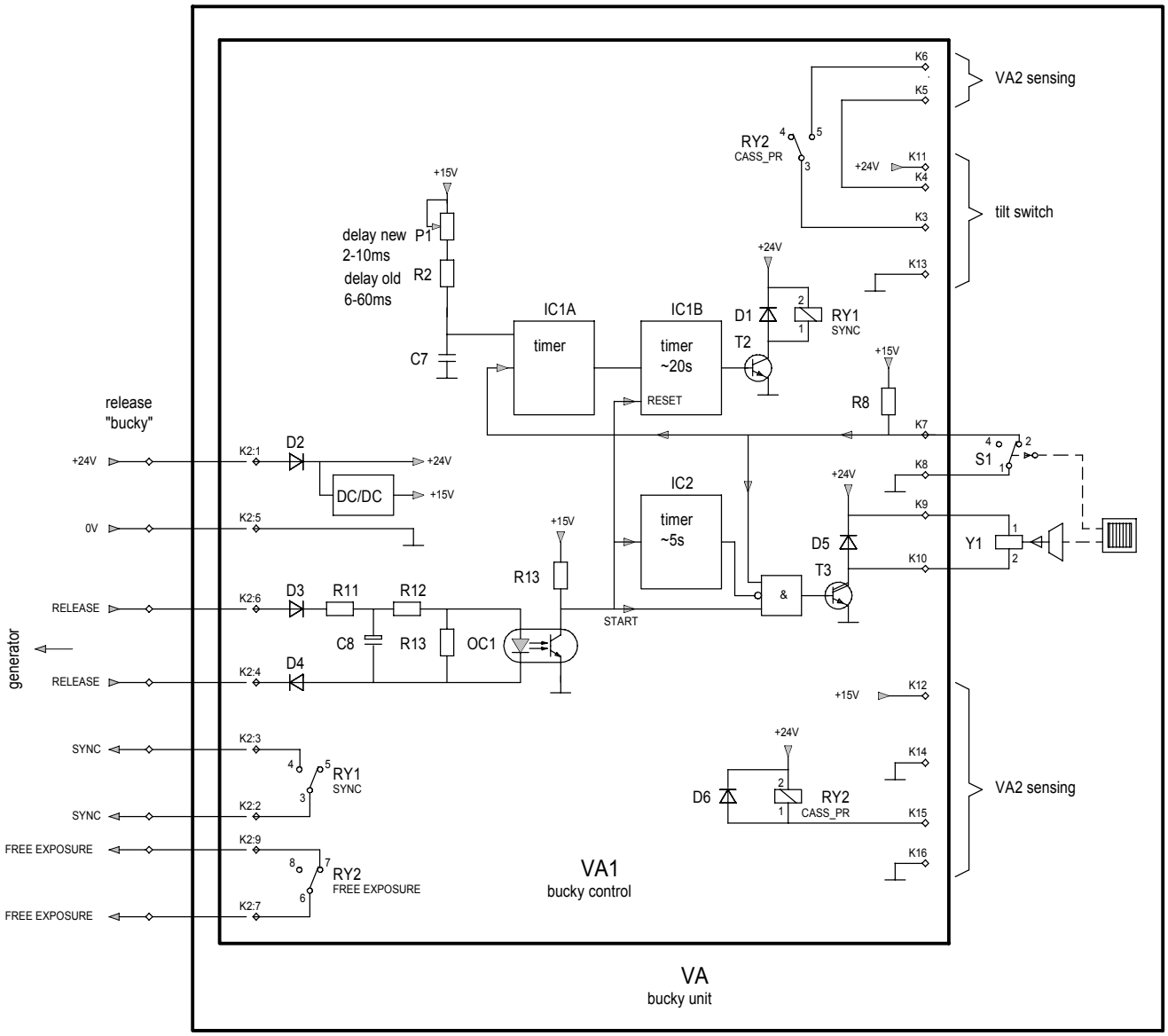

A4 01-07-20 Schr.

bucky unit non sensing

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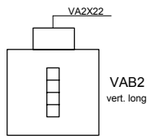

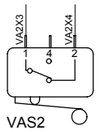

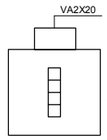

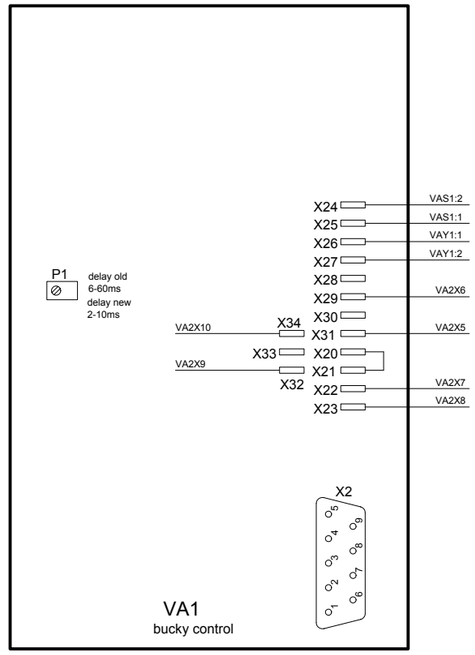

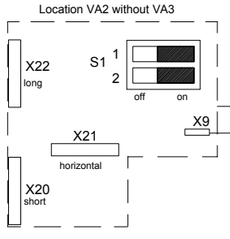

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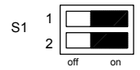

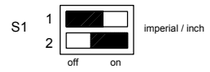

R379
R380
R381
} factory adjusted

A1/A3 04-11-23 Schr.

bucky unit sensing
Wiring diagram
and labelling

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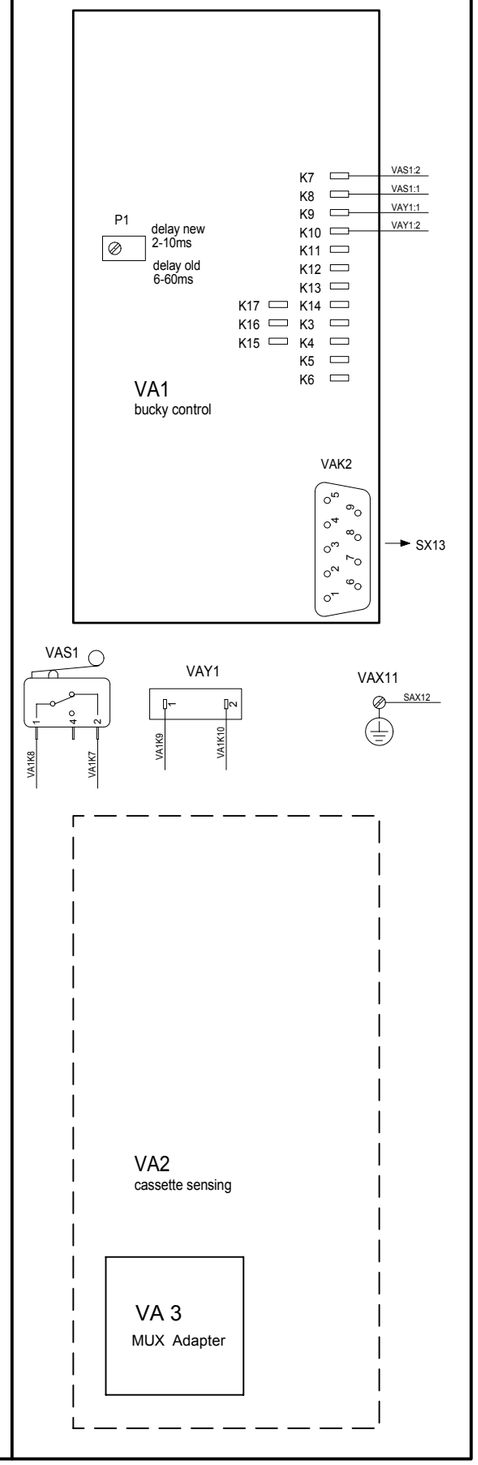

Logo	Addresse
Type No	Eledtr. data

A3 04-11-23 Schr.

Bucky unit non sensing
Wiring diagram
and labelling

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